Pembuatan Model LTSpice dari Komponen LED untuk Rangkaian Transmitter Visible Light Communication
(VLC)
AGUNG SETIA BUDI, Dzuhri Radityo Utomo, S.T, M.E., Ph.D; Dr. Dyonisius Dony Ariananda, S.T., M.Sc.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

# DAFTAR PUSTAKA

[1] K. Górecki and P. Ptak, "Compact modelling of electrical, optical and thermal properties of multi-colour power LEDs operating on a common PCB," *Energies*, vol. 14, no. 5, p. 1286, Feb. 2021.

[2] DataIntelo, "Wi-Fi and Bluetooth Modules Market Research Report 2034," https://dataintelo.com/report/global-wi-fi-and-bluetooth-modules-market, 2025, diakses 22 April 2026.

[3] Accenture, "Securing the Future of U.S. Wireless Networks: The Looming Spectrum Crisis," CTIA, Tech. Rep., Mar. 2025, diakses 22 April 2026. [Online]. Available: https://api.ctia.org/wp-content/uploads/2025/03/Looming-Spectrum-Crisis-Accenture.pdf

[4] H. Haas, L. Yin, Y. Wang, and C. Chen, "What is LiFi?" *Journal of Lightwave Technology*, vol. 34, no. 6, pp. 1533–1544, Mar. 2016.

[5] W. Popoola, T. Z. Gutema, and M. Elamassie, "Visible light communication (VLC) basics," in *Handbook of Radio and Optical Networks Convergence*, T. Kawanishi, Ed. Singapore: Springer, 2024.

[6] P. H. Pathak, X. Feng, P. Hu, and P. Mohapatra, "Visible light communication, networking, and sensing: A survey, potential and challenges," *IEEE Communications Surveys & Tutorials*, vol. 17, no. 4, pp. 2047–2077, 2015.

[7] J. M. Kahn and J. R. Barry, "Wireless infrared communications," *Proceedings of the IEEE*, vol. 85, no. 2, pp. 265–298, Feb. 1997.

[8] L. E. M. Matheus, A. B. Vieira, L. F. M. Vieira, M. A. M. Vieira, and O. Gnawali, "The internet of light: Impact of colors in LED-to-LED visible light communication systems," *Internet Technology Letters*, vol. 2, no. 1, p. e78, Oct. 2018.

[9] K. Górecki, "Electrothermal model of a power LED for SPICE," *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 25, no. 1, pp. 39–45, 2012.

[10] T. Komine and M. Nakagawa, "Fundamental analysis for visible-light communication system using LED lights," *IEEE Transactions on Consumer Electronics*, vol. 50, no. 1, pp. 100–107, Feb. 2004.

[11] Z. Ghassemlooy, W. Popoola, and S. Rajbhandari, *Optical Wireless Communications: System and Channel Modelling with MATLAB*, 2nd ed. Boca Raton, FL, USA: CRC Press, 2019.

[12] D. Karunatilaka, F. Zafar, V. Kalavally, and R. Parthiban, "LED based indoor visible light communications: State of the art," *IEEE Communications Surveys & Tutorials*, vol. 17, no. 3, pp. 1649–1678, 2015.

[13] J. Grubor, S. C. J. Lee, K.-D. Langer, T. Koonen, and J. W. Walewski, "Wireless high-speed data transmission with phosphorescent white-light LEDs," in *Proc. 33rd*

UNIVERSITAS
GADJAH MADA
**Pembuatan Model LTSpice dari Komponen LED untuk Rangkaian Transmitter Visible Light Communication (VLC)**
AGUNG SETIA BUDI, Dzuhri Radityo Utomo, S.T, M.E., Ph.D; Dr. Dyonisius Dony Ariananda, S.T., M.Sc.
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

*European Conference on Optical Communication (ECOC)*, Berlin, Germany, Sep. 2007, pp. 1–2.

[14] L. Grobe, A. Paraskevopoulos, J. Hilt, D. Schulz, F. Lassak, F. Hartlieb, C. Kottke, V. Jungnickel, and K.-D. Langer, "High-speed visible light communication systems," *IEEE Communications Magazine*, vol. 51, no. 12, pp. 60–66, Dec. 2013.

[15] E. F. Schubert, *Light-Emitting Diodes*, 2nd ed. Cambridge, U.K.: Cambridge University Press, 2006.

[16] D.-P. Han, J.-I. Shim, D.-S. Shin, and N. Yamamoto, "Modified Shockley equation for GaInN-based light-emitting diodes: Origin of the power-efficiency degradation under high current injection," *IEEE Journal of the Electron Devices Society*, vol. 7, pp. 622–628, 2019.

[17] Texas Instruments, "Analysis of Improved Howland Current Pump Configurations," Texas Instruments, Application Report SBOA437A, Dec. 2020, diakses 30 April 2026. [Online]. Available: https://www.ti.com/lit/an/sboa437a

[18] A. S. Sedra and K. C. Smith, *Microelectronic Circuits*, 7th ed. New York, NY, USA: Oxford University Press, 2015.

[19] C. R. Harris, K. J. Millman, S. J. van der Walt, R. Gommers, P. Virtanen, D. Cournapeau, E. Wieser, J. Taylor, S. Berg, N. J. Smith, R. Kern, M. Picus, S. Hoyer, M. H. van Kerkwijk, M. Brett, A. Haldane, J. F. del Río, M. Wiebe, P. Peterson, P. Gérard-Marchant, K. Sheppard, T. Reddy, W. Weckesser, H. Abbasi, C. Gohlke, and T. E. Oliphant, "Array programming with NumPy," *Nature*, vol. 585, no. 7825, pp. 357–362, Sep. 2020.

[20] Broadcom, ""SFH213 Silicon PIN Photodiode," Data Sheet," https://docs.broadcom.com/docs/AV02-2725EN, 2017, diakses 22 April 2026.